

Deploying Everything on Demand Internet Video

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A Billion Minutes per Month. So What.

- $1\text{B} \approx 20,000,000 \text{ viewers} \times 50 \text{ minutes/month}$
- YouTube :: **19B** $\approx 100\text{M viewers} \times 190 \text{ minutes/month}$ [40%]
- American Idol, Mar 3, Tue, 24.31M viewers
- **2.9B** $\approx 24.31\text{M} \times 120 \text{ minutes}$
- Super Bowl XLIII :: **24B** $\approx 100\text{M viewers} \times 240 \text{ minutes}$
- How many viewer minutes are there?
- **2.5 .. 3T** minutes $\approx 151 .. 172 \text{ Hrs/month} \times 285\text{M viewers}$
- We're still early in the evolution to Internet video

U.S.
Nielsen
comScore

How Much Bandwidth is Needed ?

- $382 \text{ Tbs} \approx 285\text{M viewers} \times 1.2 \text{ Mbs}$ [SD]
- $14 \text{ Tbs} \approx 382 \text{ Tbs} / 25 \text{ regions}$ [DMA]
 - 1400 servers @ 10 Gbs
- $714 \text{ Tbs} \approx 285\text{M viewers} \times 2.5 \text{ Mbs}$ [ED]
- $28 \text{ Tbs} \approx 714 \text{ Tbs} / 25 \text{ regions}$ [DMA]
 - 2800 servers @ 10 Gbs
- $1140 \text{ Tbs} \approx 285\text{M viewers} \times 4 \text{ Mbs}$ [HD]
- $46 \text{ Tbs} \approx 1140 \text{ Tbs} / 25 \text{ regions}$ [DMA]
 - 4600 servers @ 10 Gbs

How Much Storage is Needed ?

- $31 \text{ TB} \approx 140\text{K DVDs} \times 2 \text{ hrs} \times 2.5 \text{ Mbs}$
- $135 \text{ TB} \approx 600\text{K potential DVDs} \times 2 \text{ hrs} \times 2.5 \text{ Mbs}$
 - 1 rack @ 200TB / rack
- $11 \text{ PB} \approx 100\text{M hrs} \times 2.5 \text{ Mbs [per year]}$
 - 11 racks @ 1 PB / rack

Adoption Curve



